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ABSTRACT

This study used data from Wave 1 of the National Longitudinal Study of Adolescent Health to analyze the impact of Catholic school attendance on the likelihood of teens participating in 13 risky behaviors (e.g., using or selling drugs, committing property crime, having sex, engaging in gang-related fights, attempting suicide, and running away from home). The study focused on the Catholic school-public school distinction. Data analysis indicated that, controlling for a host of personal and family background characteristics (e.g., family supervision and degree of teenager's risk aversion), and adjusting for the endogeneity of sector choice, there was no evidence that Catholic schooling led to a lower incidence of these risky behaviors among teenagers than public schooling. (Contains 37 references.) (SM)

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CATHOLIC SCHOOLS AND BAD BEHAVIOR

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ABSTRACT

Although there is a sizeable literature of the effect of private school attendance on academic student outcomes, there is a dearth of studies of the impact of school sector on non-academic outcomes. Using a rich data set, we analyze the impact of Catholic school attendance on the likelihood that teens use or sell drugs, commit property crime, have sex, join gangs, attempt suicide, and run away from home. Controlling for a host of personal and family background characteristics and adjusting for the endogeneity of sector choice, we cannot find evidence that Catholic schooling leads to a lower incidence of these risky behaviors among teenagers.

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Catholic Schools and Bad Behavior

I. Introduction

The academic performance of K-12 public schools has become a central issue in American politics both at the local and federal level.[1] For example, in the third Presidential Debate at Washington University at St. Louis, then-governor George W. Bush declared "I've made education my number one priority." (Associated Press, August 20, 2000). One important policy proposal towards improving academic outcomes is to enhance competition between public and private schools through vouchers and other vehicles.[2] The policy rationale for this "school choice" argument is that vouchers would increase the demand for private schooling, which in turn would put pressure on public schools to improve their quality. Implicit in this proposal is the notion that private schools are more effective in improving student *academic* outcomes in comparison to public schools.[3] A large literature has emerged to investigate the validity of this hypothesis (see Altonji, Taber and Elder 2001, Figlio and Stone 1999, Neal 1997, Goldhaber 1996, Evans and Schwab 1995, Sander 1996, and Sander and Krautman 1995). This literature analyzes whether students in Catholic (and other private) schools perform better on standardized

[1] The average American student does not perform well on standardized tests in comparison to students from other countries. For example, the U.S. ranks 18th in the world on 8th grade science tests, and it ranks 19th in 8th grade math (U.S. Department of Education 2000). The issue is important, because there is evidence linking students' academic performance to their future success in the labor market (Murnane et al. 1995). Furthermore, at the aggregate level, there is evidence indicating that education quality of the labor force has a positive impact on economic growth (Hanushek and Kimko 2000).

[2] In response to a question on vouchers in the third Presidential debate, President Bush stated that "...[federal money] will go to the parent so the student can go to a tutoring program, or another public school, or a private school." A number of voucher programs have been implemented since mid-1990s (Peterson et al. 2001).

[3] Because vouchers are used mostly for religious private schools, a heated public debate has emerged regarding the constitutionality of the voucher programs. More precisely, the issue of weather public money can be used to enroll at sectarian schools and whether this is violation of the First Amendment's prohibition against the "establishment" of religion has been debated at various state courts as well as the Supreme Court of the United States (Lane 2002, Canedy 2002).

exams, are more likely to graduate from high school, and/or immediately enroll in college in comparison to students in public schools. The evidence regarding the impact of Catholic schooling on these outcomes is mixed. While there exists evidence of a positive impact (e.g. Evans and Schwab 1995), some papers report mixed results or no impact of Catholic schooling on academic outcomes (e.g. Neal 1997, Sander 1996).

If private schools generate better academic outcomes than their public counterparts, it is conceivable that they also produce more favorable non-academic outcomes for their students. That is, if the academic environment of the school has an impact on the non-academic behavior of the student, then it is possible that private schools have a differential impact on student behavior, such as criminal activity. The issue is important because if school type has an influence on non-academic student behavior, it would constitute another dimension of the current school choice debate for two reasons. First, risky behavior of youths such as juvenile crime and teenage sexual activity entail social costs, such as the financial burden put on the welfare and criminal justice systems. Second, they have ramifications for the future well-being of the individual involved. For example, Mocan, Billups and Overland (2000) show that current criminal activity makes future criminal activity more likely by increasing criminal human capital and depreciating legal human capital. Bound and Freeman (1992) and Freeman and Rodgers (2000) document a negative relationship between youth criminal record and labor market outcomes. In addition, there is evidence indicating that teenage risky behaviors are complements, which implies that there may be positive spillover effects from curtailing risky activities (Dee 1999).

In this paper we employ the National Longitudinal Study of Adolescent Health data set (Add Health) to investigate whether school type has an impact on youth risky behavior. The

detail of this data set enables us to control for a variety of individual and household characteristics that may be correlated with risky behavior. For example, we use measures that attempt to explicitly gauge the risk-aversion of the student as well as the intensity of parental supervision at home. We analyze the impact of attending a Catholic school on 13 different risky behaviors, ranging from using cocaine use to gang fights. We focus on the Catholic school-public school distinction because the number of students in non-Catholic private schools is not large enough in the data set to conduct a meaningful analysis for this group. However, this is not a major shortcoming because Catholic schools students constitute about 49 percent of all private school enrollment (U.S. Department of Education, 1999). Furthermore, most of the research on the impact of school choice has focused on Catholic school-public school differences.

We control for the endogeneity of school choice by estimating two-stage least squares and bivariate probit models, and find no evidence that Catholic schools have an influence on non-academic student outcomes. The results are robust to the empirical specification of selection, the choice of instruments and explanatory variables, as well as estimating the models by gender. The only other paper on this subject, Figlio and Ludwig (2000), does find an impact of religious private schooling on certain risky behaviors of teens. Differences between that paper and ours are discussed in the results section.

Section II discusses conceptual issues of risky teenage behavior and selection of school sector. It also describes the empirical model. Section III presents the data. The results are reported in Section IV, and Section V is the conclusion.

II. Conceptual Issues and Empirical Specifications

There exists research demonstrating that teens may be poor decision makers. For example, Halpern-Felsher and Cauffman (2000) find that adults consistently outperform teens on measures of decision-making competence regarding the long term benefits and costs of interventions such as cosmetic surgery. On the other hand, some analysts report that youths and adults react similarly regarding the perceived consequences of risky behavior (e.g. Beyth-Marom et al., 1993). Recent research in economics has demonstrated that youths respond to prices and incentives as predicted by economic theory (e.g., William et al. 2002, Mocan and Rees 2000, Gruber and Zinman 2001, Saffer and Grossman 1987). Even though youths may have different risk-aversion and time discount rates than adults, they are not irrational or emotional decision makers (Gruber 2001). As a result, there is room for public policy to influence their behavior by implementing policies that alter prices and incentives.

Behavioral change may also be accomplished by education if education can alter tastes towards risky behavior, or if education can provide information regarding future costs of risky behavior.[4] Figlio and Ludwig (2000) list a number of reasons why Catholic schools may be relatively more effective than public schools in this regard. First, religious instruction in Catholic schools may change the preferences of teens for certain activities. Second, Catholic schools may tend to offer more strict discipline than public schools. Third, Catholic schools, given that they can more easily regulate who attends, may offer a better peer group than public schools on average.[5]

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[4] Tastes can also be influenced by other factors such as peers, culture, and role models. For a discussion of the application of behavioral economics to theoretical models of the risky behavior of teens, see O'Donoghue and Rabin (2001).

[5] Figlio and Ludwig (2000) list other reasons including an "incapacitation" effect, as students in Catholic schools are assigned more homework and participate in more extracurricular activities. Thus, students in Catholic schools may have less time available to devote to risky activities.

The investigation of the effect of Catholic school attendance on student outcomes (academic as well as non-academic) is complicated by empirical difficulties. First, it is important to control for family and child heterogeneity that may influence risky behavior. Second, it is likely that the factors that determine a family's decision to send the child to a Catholic school also impact that child's outcomes. For example, if parents who put a high value on education tend to send their children to Catholic schools, and if this unobservable parent attribute has an impact on the outcome of the child, then the correlation between Catholic schooling and student outcomes may be attributable to this unobservable family characteristic. Alternatively, there may exist negative selection into Catholic schooling. If children with higher unobserved probability of undertaking risky activities could be more likely to attend Catholic schools. This is because teens with pre-existing behavioral problems (unobserved to the researchers) may be sent to Catholic schools because their parents may believe that they are more likely to benefit from the added religious instruction and any extra discipline offered in Catholic schools. Under this scenario, the unobserved attributes that make Catholic school choice more likely are positively correlated with the teen's risky behavior, and the single equation estimates of the effect of Catholic schooling on risky behavior would be biased toward finding a positive relationship between Catholic schooling and risky behavior.

Our empirical strategy is designed to address these issues in different ways. First, we include a large number of explanatory variables to capture family and child heterogeneity. Among these are variables that attempt to measure the child's risk aversion and the extent of the supervision of the family. More specifically, consider Equation (1)

$$(1) \qquad R^*_j = \beta_0 + \beta_1 D_j + \beta_2 T_j + \beta_3 C_j + \beta_4 X_j + \varepsilon_j,$$

where the propensity to engage in risky behavior for teen j, denoted by R^*_j, is explained by the socio-demographic and other characteristics of the family (D), the characteristics of the teen (T), Catholic school attendance (C), and other factors (X), including urbanity and region of the country. The dichotomous variable R takes the value of one if the student engaged in risky behavior, and zero otherwise; and R=1 if $R^*>0$. The indicator variable C equals one if the teen attends a Catholic school, and zero if he or she attends a public school.[6]

The propensity to enroll in a Catholic private school is captured by a latent variable C^*_j in Equation (2), where Zj stands for a vector of instruments that explains the tendency for Catholic school attendance, but does not have a direct impact the teen's propensity to engage in risky behaviors.

(2) $C^*_j = \alpha_0 + \alpha_1 D_j + \alpha_2 T_j + \alpha_3 X_j + \alpha_4 Z_j + \gamma_j,$

The student attends a Catholic school (C=1) when $C^*>0$. As argued above, it is plausible that the error terms ε_j and γ_j are correlated. That is, unobserved factors that impact the decision to attend a Catholic school may be correlated with unobserved attributes that influence the propensity to engage in risky behavior. In that case, estimation of Equation (1) by OLS would lead to a biased estimate the impact of Catholic school attendance on risky behavior (β_3). To deal with this issue we employ two alternative estimation strategies. First, we estimate Equations (1) and (2) using two-stage least squares (2SLS). If the Z's are valid instruments, then 2SLS estimation of this model will yield an unbiased estimate of the impact of Catholic school attendance on risky behavior.

[6] Given the very small sample size of students in non-Catholic private schools, we were unable to consider this segment separately in the analysis. Adding non-Catholic private schools to the sample and performing the analysis based on private-public school distinction did not alter the results. However, this cannot be taken as evidence indicating that non-Catholic private schools and Catholic schools have the same impact on risky behavior.

In analyses of the impact of Catholic schooling on academic outcomes, researchers used as instruments the religious beliefs of the student or family (Coleman, Hoffer, Kilgore, 1982; Noell, 1982; Evans and Schwab, 1995, Neal, 1997), measures of the availability of Catholic schooling—proportion of Catholics in the area, proximity of Catholic schooling, urbanity (Evans and Schwab, 1995; Goldhaber, 1996; Neal, 1997), and interactions between religious beliefs and urbanity (Sander and Krautman, 1995; Sander 1996). In our case, these might not be desirable instruments because religious affiliation, religiosity of the area, and urbanity may also impact the propensity to engage in risky behavior. Thus, we use measures of the power of teachers' unions in the state as instruments. More specifically, we employ variables, measured in 1991, that indicate if the public school system has the duty to bargain with teachers' unions, and if teachers' unions have an explicit right to strike. These instruments were used by Figlio and Stone (1999) to analyze the impact of Catholic and other private schooling on academic outcomes. There is no a priori reason to believe that these instruments are correlated with the incidence of risky behavior, and in fact they are found to be uncorrelated with the indicators of risky behavior in our data. To the extent that more powerful teacher unions strengthen the bargaining position of teachers in contract negotiations and therefore drive more children to private schools, they are valid instruments. To investigate the robustness of the results, we tried alternative instruments, which are discussed in the results section.

We also estimate Equations (1) and (2) jointly using maximum likelihood by allowing for possible correlation between the error terms ε_j and γ_j. We assume a bi-variate normal distribution of ε_j and γ_j, where $E[\varepsilon_j]=E[\gamma_j]=0$, $Var[\varepsilon_j]=Var[\gamma_j]=1$, $Cov[\varepsilon_j\gamma_j]=\rho$, and estimate the models by bi-variate probit.

III. Data

The data used in the paper are drawn from Wave I of the National Longitudinal Study of Adolescent Health (Add Health).[7] Add Health is a nationally representative survey of adolescents in grades 7 through 12. It was designed to provide detailed information on teen behavior, including their criminal and sexual activities and substance use/abuse. The full sample from Wave I consists of 20,745 adolescents interviewed between September 1994 and December 1995. We select a subsample consisting of teens attending a Catholic or public school at the time of the interview who reside within a metropolitan area (MSA).[8] After selecting teens that fit these criteria and excluding cases with missing data, we have a sample of 7,018 adolescents.

The survey contains a section with detailed questions about one's delinquent behavior. Specifically, the respondents were asked whether they had committed any of the following acts in the past 12 months: damaging property, robbery, burglary, participating in a gang fight, running away from home, selling drugs, or stealing something worth more than fifty dollars. Teens also answered questions about whether they had ever used different types of illicit drugs such as marijuana, cocaine, hard drugs (heroin, LCD, etc), or ever injected illegal drugs with a needle. Finally, they were asked about their sexual behavior and whether they had attempted suicide in the 12 months prior to the interview date.

Several steps were taken to maintain data security and minimize the potential for interviewer or parental influence. First, respondents were given no questionnaires. Rather, all data were recorded on laptop computers. Second, for sections that ask for sensitive information such as delinquent behavior, the respondent listened to pre-recorded questions through earphones

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[7] Data collection for Add Health was funded by the National Institute of Child Health and Human Development (NICHD) and 17 other federal agencies. For further information see http://www.cpc.unc.edy/projects/addhealth.

[8] We exclude teens in rural areas for two reasons: (1) to be consistent with Figlio and Ludwig (2000), and (2) no Catholic school students were observed to be residing outside of an MSA.

and entered the answers directly on the laptop. Turner, et al. (1998) provide evidence that this computer-based method leads to a significantly higher incidence of reported risky activities relative to other survey methods.

Parents were asked about the extent of the supervision of their children. More specifically, they were asked if they allow the child to decide with whom to "hang around", to decide about the time to be at home on weekdays and weekends, and to decide how much TV to watch. This information allows us to control aspects of the home environment that may have an impact on risky behavior.

Definitions of the outcome variables, explanatory variables, and instruments are listed in Table 1. Summary statistics of the outcome variables, reported in Table 2, show that students in Catholic schools are more likely to have engaged in most of the risky behaviors under study. Specifically, Catholic school students are more likely to have used or sold drugs, or committed robbery or burglary. On the other hand, Catholic school students are less likely to have had sex or attempted suicide.

Table 3 lists means and standard deviations of the explanatory variables. Unsurprisingly, students in Catholic schools are much more likely to be Catholic and tend to come from families that are intact, and have higher incomes. For example, the mean household income of Catholic school students is over $65,000, while mean household income for public school students is only about $42,000. Students in Catholic schools have more educated parents, and they are more likely to be white. Interestingly, parents of Catholic school students tend to be more lax with their children at home. They are more likely to report that they allow their children to decide what time they can come home at night, who to "hang around" with, and how much television to watch.

We employ an indicator of seat belt usage as a measure of each teen's taste for risk aversion. Students in Catholic schools are more likely to wear their seatbelts. The last two variables of Table 3 (Teachers Can Strike and Duty To Bargain With Union) show that students in Catholic schools are much more likely to reside in states with stronger teacher unions. These variables, which are used as instruments for Catholic school choice capture the power of teachers unions in the state. Measures of these variables for 1984 were used in Figlio and Stone (1999) as instruments in models explaining the impact of private schooling on standardized test scores and graduation rates. They are obtained from the National Bureau of Economic Research (NBER) Public Sector Collective Bargaining Law Data Set.[9]

IV. Results

To put the results into perspective we first estimated linear probability models (OLS) as well as probit models for the 13 outcomes, where each outcome is a dichotomous indicator of a particular risky behavior. The first column of Table 4 reports the estimated coefficients and standard errors of the effect of Catholic school attendance on each risky behavior in linear probability models, estimated by OLS. The second column displays the marginal effects calculated from probit regressions. Standard errors are corrected for the cluster sampling of students from schools.[10] [11] Column three of Table 4 shows the magnitude of the average treatment effect of attending a Catholic school for each risky behavior analyzed.[12] Each model contains all variables listed in Table 1, controlling for such

[9] We thank Kim Reuben for providing us with these data for 1991.

[10] Standard errors are corrected for the cluster sampling of students from schools and the use of a state-level instrument. The correction is described in Figlio and Ludwig (2000).

[11] For the linear probability models we also calculated heteroscedasticity-adjusted standard errors, where observations are weighted by $1/[P_i(1-P_i)]^{1/2}$, where P_i stands for the estimated probability. Although cases where Pi ≤ 0 and Pi ≥ 1 had to be dropped, we obtained very similar results.

[12] The average treatment effect is calculated as $1/n\Sigma[P_i(C=1)-P_i(C=0)]$, where $P_i(C=1)$ is the predicted probability of risky behavior for the ith student given that he/she attends a Catholic school, and $P_i(C=0)$ is the his/her predicted probability given hat she does not attend a Catholic school.

individual characteristics as age, race, gender, religion, the grade level, and the number of siblings of the student; whether the student is born in the U.S., mother and father's education, marital status of the parents, whether the mother works, family income and welfare participation, whether English is the spoken language at home, the location of the school (urban or suburban). It also includes a number of variables gauging the leniency of parental supervision. Among this group are variables measuring whether the parents allow the student to decide with whom to "hang around", whether the parents allow the student to decide how much TV to watch, and to decide about the time to be at home (on week nights and another variable for weekends). Along the same lines, we include variables such as whether illegal drugs are available to the student at home, whether guns are available at home and whether alcohol is easily available at home. The models also include a variable that gauges whether the student wears a seatbelt every time in a car was an attempt to control for risk aversion.

As Table 4 demonstrates, the coefficient of *Catholic School* is positive in most models and statistically significant in both the linear probability and probit models for *Cocaine*, *Injecting Drugs, Robbery, Burglary*, and *Selling Drugs,* implying that Catholic schooling increases the propensity to engage in these behaviors. The magnitudes of the average treatment effects are similar to the marginal effects reports in columns I and II. However, these results are suspect as they do not control for endogeneity of school choice. In Table 5 we report results obtained from 2SLS and bi-variate probit models, where "Teachers Can Strike" and "Duty to Bargain with Union" are used as instruments.[13] Table 5 demonstrates that Catholic schooling variable is never significant. This means that controlling for endogeneity of school choice, there is no impact of Catholic schooling on risky behavior. [14] [15]

[13] The correction is described in Figlio and Ludwig (2000).

[14] Identification in the bi-variate probit models can be achieved by non-linearities even if Equations (1) and (2) contain the same explanatory variables (Z=0 in Equation 2). These specifications produced very similar results.

[15] As there is no impact of Catholic schooling, and as discussed by Evans and Schwab (1995), Angrist (1991) shows that the magnitude of the average treatment effect is nearly identical to those obtained from 2SLS. Therefore, we do not report the average treatment effects of the bivariate probit models.

Although we do not report full set of regression results in the interest of space, in the Appendix we display the OLS and 2SLS results for four outcomes (Marijuana, burglary, cocaine and selling drugs) along with the results of the first-stage regression. As the first column of Appendix Table 1 demonstrates, the instruments are highly significant in the expected direction.[16] There exist interesting regularities in the tables. For example, in all 2SLS models, "wears seatbelt" has a negative and statistically significant coefficient, indicating that risk aversion has a negative impact on the propensity to engage in criminal activity. Similarly, the availability of drugs, guns and alcohol at home is positively related with risky behavior. Other outcomes provided very similar pattern in coefficients.

It has been argued that gender differences in risky behavior can be attributed to differences in risk aversion (Powell and Ansic, 1997), discount rates (Lau and Williams 1998), and the motivation for security (Schnieder and Lopes, 1986). To investigate the sensitivity of the results we estimated the models separately for males and females. Only 19 males out of 3,455 and 11 females out of 3,563 injected drugs, and only 90 females used cocaine. Therefore it is not feasible to estimate the "injection" equation by gender, or "cocaine" equation for females. The first three columns of Table 6 report the OLS and probit results for females, and columns 4-6 report the results for males. Although these single-equation estimates are not reliable because of their failure to control for endogeneity of school type, one particular regularity is evident in the table. For females, the point estimate of the coefficient of Catholic school is negative in nine of the 11 outcomes in OLS models, and in eight of the probit models. For males, it is negative in only two cases out of 12 in OLS regressions, and once in the probit models, pointing to potentially different selection mechanisms between males and females.

[16] When we included the instruments in the second stage regressions, their estimated coefficients were never

Tables 7A and 7B display the results obtained from 2SLS and bivariate probit models by gender. Consistent with Table 4, the significance of Catholic Schooling disappears when the endogeneity of school choice is controlled for. Although the estimated correlation coefficients between the error term in the bivariate probit models are statistically insignificant for the most part, the point estimates suggest an interesting differences between genders. While the correlation coefficient is positive for males in most cases, it is negative for females in case of *damaged property, burglary, gang fight, attempted suicide had sex, theft* and *robbery*. This seems to suggest that the factors that make a male teenager more likely to attend a Catholic school also make him more likely to engage in risky behavior. Put differently, male students with a potential for risky behavior are more likely to go to a Catholic school. The reverse is true for females. Unobserved attributes that make females students less likely to engage in risky behavior make them more likely to enroll in Catholic schools.

To demonstrate that our data set is consistent with other databases in one respect, we investigated the impact of Catholic schooling on the Add Health Picture Vocabulary Test (AHPVT). At the beginning of the interview, teens were given the AHPVT, which is a computerized, abridged version of the Peabody Picture Vocabulary Test. The AHPVT involves the interviewer reading a word then the respondent selecting the illustration which best fits the word.[17] The 2SLS estimate of the impact of Catholic school attendance on AHPVT suggests that all else equal, students in Catholic schools score about 0.14 of a standard deviation higher on this standardized exam than students in public schools. Although the estimated coefficient is not estimated with precision, this result is consistent with the literature on the relative effectiveness of Catholic and public schools.

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significant; neither individually nor jointly.

[17] In each question, the respondent was asked to choose from four simple, black-and-white illustrations arranged in a multiple-choice format. The total number of questions on the AHPVT was 78, raw scores have been standardized

Figlio and Ludwig (2000) (FL) find that Catholic schooling has no impact on drinking, smoking, gang involvement or marijuana use, but it reduces teen sexual activity, arrests, and the use of hard drugs. The difference in results between FL and this paper may be attributable to a number of factors. First, we use the Add Health data set, while Figlio and Ludwig (2000) use the National Education Longitudinal Survey (NELS).[18] One main difference between the data sources is the age of the respondents. Add Health respondents were in grades 7-12 when they were interviewed, while the vast majority of the individuals in the NELS sample used by FL was 18 years old. When we estimated our results with the sample of individuals who are 17 years of age and older, we obtained the same results as those obtained from our full sample. A second difference pertains to model specification. FL use measures of student outcomes in 1988 as explanatory variables for models of risky behaviors in 1992. Thus, they examine the impact of Catholic school attendance in 1990 on risky behaviors in 1992. The Add Health data do not permit us to include prior behavior as an explanatory variable. Thus, our research asks whether Catholic schooling has an impact on the "level" of risky behaviors, while FL ask whether Catholic schooling has an impact on the "value-added" to risky behaviors. Third, we control for several measures of the home environment not available in NELS, including TV watching and other measures of the discipline environment at home. We also include seatbelt use of the respondent as a measure of risk aversion. By including these variables as explanatory variables in our empirical models of risky behaviors, we attempt to control for the extent of parental supervision and risk awareness. As tables in the appendix demonstrate, these variables are

by age. The sample mean (std) of AHPVT is 100.91 (14.83). The mean (std) in Catholic schools is 105.66 (12.28), and it is 99.86 (14.88) in public schools.

[18] Respondents to the Add Health survey answered sensitive questions via laptop computer, while NELS respondents were given pen and paper questionnaires. Turner, et al. (1998) reports that computer-assisted methods like those used in the Add Health survey yield higher incidences of self-reported risky behaviors than pen and paper methods. To address this issue, FL restrict their sample to only students who revealed their trustworthiness by not overstating their school grade point averages, and obtain estimates highly similar to their full sample.

consistently significant. However, dropping them from the models did not change the conclusions. Note that longitudinal data sets are not very helpful in attempts to control for unobserved heterogeneity in this context. This is because, although longitudinal data allow for time-differencing and therefore elimination of unobserved time-invariant heterogeneity, this is not feasible in this circumstance because very few students move between Catholic and public schools from year to year.

While both studies use an instrumental variables approach to deal with the endogeneity of school sector, the instruments are different. FL use the number of railcars per capita in the local transportation system to explain private school attendance.[19] As is the case for our instruments, their instruments perform well—a high correlation with school sector with seemingly no independent impact on risky behaviors. Thus, there is no obvious reason to explain the difference between the results of the two papers.

To investigate further the sensitivity of the results, we tried alternative instruments. Specifically, we used the binary variables that indicate whether (1) teachers' union is not allowed to strike but penalties are left to the discretion of the court; (2) teachers' union is not allowed to strike, but penalties are specified in law; (3) laws are silent; (4) teachers' union has a right to meet and confer; (5) union has a right to present proposals to the government; (6) employer is authorized but nor required to bargain with union; (7) collective bargaining is not allowed; (8) there are no provisions on the collective bargaining. Using these eight variables as instruments did not alter the results.

[19] FL also interact this variable with measures of socio-economic status. They suggest, "a metropolitan area's public transportation infrastructure should have a greater effect on the non-tuition costs of private schooling for the lower-SES families who rely on public transportation the most." These instruments (railcars per capita and interactions with SES) seem valid as, "there is little reason to believe that the differences between high- and low-SES families in the propensity of teens to engage in risky or anti-social behaviors should vary systematically with the quality of the local railway system after conditioning on the school sector of attendance." Twenty-two of the 182 MSA's in their sample have non-zero values for railcars per capita.

The Add Health database reports whether the surveyor believed that the respondent answered the questions about risky behaviors truthfully. When we restricted the sample to only teens who are rated to be truthful by the surveyor, the results remained the same. Finally, we added to the models the total crime rate in the county in 1994, total juvenile arrests per population in the county in 1993, and per capita local government direct general expenditures on police protection in the county in 1987. Because these variables are predetermined, there is no problem of simultaneity (Mocan and Gittings, forthcoming; Corman and Mocan 2000, Levitt 1998). The coefficient of the crime rate in the county was consistently positive and the deterrence variables (juvenile arrests per population and police expenditure) were negative in some outcomes. Inclusion of these variables did not change the estimated coefficients of Catholic schooling in any meaningful manner.

V. Conclusion

Engaging in risky behaviors can have negative consequences for the current and future well-being of the individual and his or her family, and these behaviors can also have negative social consequences through their burdens on the welfare and criminal justice systems. Although teenage risky behavior can be changed by sanctions and incentives, another potential tool in this regard is the influence of schooling. In particular, the analysis of the impact of Catholic school education on teenage risky behavior is important because of the current school choice debate in the United Sates.

Using a rich, nationally representative data set, we analyze the impact of Catholic school attendance on risky behaviors such as the use or selling drugs, committing theft, robbery and burglary, having sex, engaging in gang-related fights, attempting suicide, and running away from

home. We control for a large number of personal and family background characteristics, including various measures of family supervision as well as a measure of the degree of the teenager's risk aversion. We allow for the endogeneity of school choice by estimating two-stage least squares and bi-variate probit models, and find no evidence that Catholic schooling leads to a lower incidence of risky behaviors among teenagers. These results are robust to many alternative specifications.

Table 1

Variable Definitions

Cocaine	Dummy variable (=1) if ever used cocaine in life, 0 otherwise
Marijuana	Dummy variable (=1) if ever used marijuana in life, 0 otherwise
Hard Drugs	Dummy variable (=1) if ever used ecstasy, mushrooms, speed, ice, heroin, LCD, or PCP in life, 0 otherwise
Injected Drugs	Dummy variable (=1) if ever injected any illegal drug with a needle, 0 otherwise
Damaged Property	Dummy variable (=1) if deliberately damaged someone else's property in the past 12 months, 0 otherwise
Burglary	Dummy variable (=1) if went into a house or building to steal something in the past 12 months, 0 otherwise
Gang Fight	Dummy variable (=1) if took part in a fight where a group of friends was against another group in the past 12 months, 0 otherwise
Attempted Suicide	Dummy variable (=1) if attempted suicide in the past 12 months, 0 otherwise
Had Sex	Dummy variable (=1) if ever had sexual intercourse, 0 otherwise
Ran Away from Home	Dummy variable (=1) if run away from home in the past 12 months, 0 otherwise
Sold Drugs	Dummy variable (=1) if sold marijuana or other drugs in the past 12 months, 0 otherwise
Theft	Dummy variable (=1) if stole something worth more than 50 dollars in the past 12 months, 0 otherwise
Robbery	Dummy variable (=1) if used or threatened to use a weapon to get something from someone, 0 otherwise
Male	Dummy variable (=1) if male, 0 otherwise
12 Years Old or Younger	Dummy variable (=1) if less than or equal to 12 years of age, 0 otherwise
13 Years Old	Dummy variable (=1) if 13 years of age, 0 otherwise
14 Years Old	Dummy variable (=1) if 14 years of age, 0 otherwise
15 Years Old	Dummy variable (=1) if 15 years of age, 0 otherwise
16 Years Old	Dummy variable (=1) if 16 years of age, 0 otherwise
17 Years Old	Dummy variable (=1) if 17 years of age, 0 otherwise
18 Years Old	Dummy variable (=1) if 18 years of age, 0 otherwise
19 Years or Older	Dummy variable (=1) if older than 18 years or age, 0 otherwise
Hispanic	Dummy variable (=1) if Hispanic, 0 otherwise
White	Dummy variable (=1) if non-Hispanic white, 0 otherwise
Black	Dummy variable (=1) if black, 0 otherwise
Other Race	Dummy variable (=1) if other race, 0 otherwise
Mother Has Less Than High School Education	Dummy variable (=1) if mother has less than high school degree, 0 otherwise
Mother Has High School Education	Dummy variable (=1) if mother has high school degree, 0 otherwise
Mother Has GED	Dummy variable (=1) if mother has GED, 0 otherwise
Mother Has Some College Education	Dummy variable (=1) if mother has a business, vocational, or trade degree, but no college degree, 0 otherwise
Mother Has College Degree or More	Dummy variable (=1) if mother has college degree or more, 0 otherwise
Mother's Education Missing	Dummy variable (=1) if mother's education is missing, 0 otherwise
Father Has Less Than High School Education	Dummy variable (=1) if father has less than high school degree, 0 otherwise
Father Has High School Education	Dummy variable (=1) if father has high school degree, 0 otherwise
Father Has GED	Dummy variable (=1) if father has GED, 0 otherwise

(Table 1 concluded)

Father Has Some College Education	Dummy variable (=1) if father has a business, vocational, or trade degree, but no college degree, 0 otherwise
Father Has College Degree or More	Dummy variable (=1) if father has college degree or more, 0 otherwise
Father's Education Missing	Dummy variable (=1) if father's education is missing, 0 otherwise
7th Grader	Dummy variable (=1) if attending 7th grade, 0 otherwise
8th Grader	Dummy variable (=1) if attending 8th grade, 0 otherwise
9th Grader	Dummy variable (=1) if attending 9th grade, 0 otherwise
10th Grader	Dummy variable (=1) if attending 10th grade, 0 otherwise
11th Grader	Dummy variable (=1) if attending 11th grade, 0 otherwise
12th Grader	Dummy variable (=1) if attending 12th grade, 0 otherwise
Any Parent On Welfare	Dummy variable (=1) if any parent is on welfare, 0 otherwise
Mother Works	Dummy variable (=1) if mother works, 0 otherwise
Wears Seatbelt	Dummy variable (=1) if wears seatbelt every time in a car, 0 otherwise
Drugs At Home	Dummy variable (=1) if illegal drugs are available to the respondent at home, 0 otherwise
Guns At Home	Dummy variable (=1) if guns are available to the respondent at home, 0 otherwise
Alcohol At Home	Dummy variable (=1) if alcohol is easily available to the respondent at home, 0 otherwise
Catholic	Dummy variable (=1) if respondent is Catholic, 0 otherwise
Baptist	Dummy variable (=1) if respondent is Baptist, 0 otherwise
Not Religious	Dummy variable (=1) if respondent adheres to no religion, 0 otherwise
Other Religion	Dummy variable (=1) if other religion, 0 otherwise
Born Again Christian	Dummy variable (=1) if thinks of himself/herself as a Born Again Christian, 0 otherwise
Decides Own Curfew on Weekends	Dummy variable (=1) if parents allow the respondent to decide about the time to be at home on weekend nights, 0 otherwise
Chooses Own Friends	Dummy variable (=1) if parents allow the respondent to decide with whom to hang around, 0 otherwise
Decides TV Time	Dummy variable (=1) if parents allow respondent to decide how much TV to watch, 0 otherwise
Decides Own Curfew on Weeknights	Dummy variable (=1) if parents allow the respondent to decide about the time to be at home on week nights, 0 otherwise
Single Parent	Dummy variable (=1) if lives with a single parent, 0 otherwise
Married Parents	Dummy variable (=1) if lives with a married parent, 0 otherwise
Divorced Parents	Dummy variable (=1) if lives with a divorced parent, 0 otherwise
Separated Parents*	Dummy variable (=1) if lives with a separated parent, 0 otherwise
Urban School	Dummy variable (=1) if the school is in an urban area, 0 otherwise
Suburban School	Dummy variable (=1) if the school is in a suburban area, 0 otherwise
West	Dummy variable (=1) if lives in West, 0 otherwise
Midwest	Dummy variable (=1) if lives in Midwest, 0 otherwise
South	Dummy variable (=1) if lives in South, 0 otherwise
Northeast	Dummy variable (=1) if lives in Northeast, 0 otherwise
English Spoken At Home	Dummy variable (=1) if English is the spoken language at home, 0 otherwise
U.S. Born	Dummy variable (=1) if born in the US, 0 otherwise
Number of Siblings	Number of siblings
Total Family Income	Total family income
Teachers Can Strike	Dummy variable (=1) if teacher union has explicit right to strike, 0 otherwise
Duty to Bargain with Union	Dummy variable (=1) if public school system has to duty to bargain with union, 0 otherwise
Catholic School	Dummy variable (=1) if attending a catholic school, 0 if attending a non-catholic public school

Table 2

Risky Behavior Across Sectors

Variable	Full Sample		Catholic Schools		Public Schools	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Cocaine	0.032	(0.177)	0.057	(0.233)	0.031**	(0.174)
Marijuana	0.282	(0.450)	0.336	(0.473)	0.280**	(0.449)
Hard Drugs	0.074	(0.261)	0.104	(0.305)	0.073**	(0.259)
Injected Drugs	0.004	(0.065)	0.018	(0.133)	0.003***	(0.061)
Damaged Property	0.188	(0.391)	0.218	(0.414)	0.187	(0.390)
Burglary	0.052	(0.221)	0.079	(0.270)	0.051**	(0.219)
Gang Fight	0.210	(0.407)	0.207	(0.406)	0.210	(0.407)
Attempted Suicide	0.041	(0.197)	0.014	(0.119)	0.042**	(0.200)
Had Sex	0.376	(0.485)	0.325	(0.469)	0.379*	(0.485)
Ran Away from Home	0.088	(0.283)	0.071	(0.258)	0.088	(0.284)
Sold Drugs	0.075	(0.264)	0.125	(0.331)	0.073***	(0.260)
Theft	0.058	(0.233)	0.075	(0.264)	0.057	(0.0232)
Robbery	0.043	(0.203)	0.064	(0.246)	0.042*	(0.201)
Number of Observations	7,018		280		6,738	

*** Statistically different from Catholic school mean at p<.01.
** Statistically different from Catholic school mean at p<.05.
* Statistically different from Catholic school mean at p<.10.

Table 3

Summary Statistics of Explanatory Variables and Instruments

Variable	Full Sample		Catholic Schools		Public Schools	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Personal Characteristics						
Male	0.492	(0.500)	0.607	(0.489)	0.488***	(0.500)
U.S. Born	0.889	(0.314)	0.929	(0.258)	0.887**	(0.316)
12 Years Old or younger	0.035	(0.184)	0.011	(0.103)	0.036**	(0.186)
13 Years Old	0.130	(0.336)	0.104	(0.305)	0.131	(0.337)
14 Years Old	0.153	(0.360)	0.136	(0.343)	0.154*	(0.361)
15 Years Old	0.182	(0.386)	0.221	(0.416)	0.180	(0.384)
16 Years Old	0.190	(0.393)	0.179	(0.384)	0.191	(0.393)
17 Years Old	0.183	(0.386)	0.196	(0.398)	0.182	(0.386)
18 Years Old	0.114	(0.318)	0.146	(0.354)	0.112*	(0.316)
19 Years or Older	0.013	(0.114)	0.007	(0.084)	0.014	(0.115)
Hispanic	0.203	(0.402)	0.132	(0.339)	0.206***	(0.404)
White	0.460	(0.498)	0.557	(0.498)	0.456***	(0.498)
Black	0.233	(0.427)	0.157	(0.365)	0.236***	(0.425)
Other Race	0.104	(0.305)	0.154	(0.361)	0.102***	(0.303)
7^{th} Grade	0.156	(0.363)	0100	(0.301)	0.158***	(0.365)
8^{th} Grade	0.153	(0.360)	0.118	(0.323)	0.154*	(0.361)
9^{th} Grade	0.167	(0.373)	0.179	(0.384)	0.166	(0.372)
10^{th} Grade	0.197	(0.398)	0.218	(0.414)	0.196	(0.397)
11^{th} Grade	0.185	(0.388)	0.211	(0.409)	0.184	(0.387)
12^{th} Grade	0.143	(0.350)	0.175	(0.381)	0.141	(0.348)
Catholic	0.292	(0.455)	0.736	(0.442)	0.274***	(0.446)
Baptist	0.197	(0.398)	0.068	(0.252)	0.202***	(0.402)
Not Religious	0.132	(0.338)	0.039	(0.195)	0.136***	(0.342)
Other Religion	0.379	(0.485)	0.157	(0.365)	0.388***	(0.487)
Born Again Christian	0.255	(0.436)	0.079	(0.270)	0.263***	(0.440)
Risk Aversion and Family Supervision						
Wears Seatbelt	0.876	(0.329)	0.929	(0.258)	0.874***	(0.332)
Drugs At Home	0.030	(0.170)	0.025	(0.156)	0.030	(0.170)
Guns At Home	0.182	(0.386)	0.196	(0.398)	0.182	(0.386)
Alcohol At Home	0.293	(0.455)	0.371	(0.484)	0.290***	(0.454)
Decides Own Curfew on Weekends	0.331	(0.471)	0.371	(0.484)	0.329	(0.470)
Chooses Own Friends	0.841	(0.365)	0.868	(0.339)	0.840	(0.366)
Decides TV Time	0.820	(0.384)	0.832	(0.374)	0.820	(0.384)
Decides Own Curfew on Weeknights	0.638	(0.481)	0.654	(0.477)	0.637	(0.481)
Mother's Education						
Mother Has Less Than High School Education	0.161	(0.368)	0.036	(0.186)	0.167***	(0.373)
Mother Has High School Education	0.284	(0.451)	0.268	(0.444)	0.285	(0.451)
Mother Has GED	0.037	(0.189)	0.029	(0.167)	0.038	(0.190)
Mother Has Some College Education	0.210	(0.408)	0.229	(0.421)	0.210	(0.407)

(Table 3 concluded)

Variable	Full Sample		Catholic Schools		Public Schools	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Mother Has College Degree or More	0.261	(0.439)	0.414	(0.493)	0.255***	(0.436)
Mother Education Missing	0.045	(0.208)	0.025	(0.156)	0.046*	(0.210)
Father's Education						
Father Has Less Than High School Education	0.104	(0.305)	0.021	(0.145)	0.108***	(0.310)
Father Has High School Education	0.182	(0.386)	0.150	(0.358)	0.183	(0.387)
Father Has GED	0.017	(0.131)	0.018	(0.133)	0.017	(0.131)
Father Has Some College Education	0.124	(0.330)	0.146	(0.354)	0.123	(0.329)
Father Has College Degree or More	0.200	(0.400)	0.400	(0.491)	0.192***	(0.394)
Father Education Missing	0.372	(0.483)	0.264	(0.442)	0.377***	(0.485)
Family Characteristics						
Single Parent	0.069	(0.253)	0.039	(0.195)	0.070**	(0.255)
Married Parents	0.690	(0.463)	0.768	(0.423)	0.686***	(0.464)
Divorced Parents	0.153	(0.360)	0.146	(0.354)	0.153	(0.360)
Separated Parents	0.089	(0.204)	0.046	(0.211)	0.090**	(0.287)
Number of Siblings	1.513	(1.388)	1.396	(1.181)	1.518	(1.396)
Total Family Income (/10,000)	4.307	(4.390)	6.566	(4.260)	4.213***	(4.370)
Any Parent On Welfare	0.121	(0.326)	0.061	(0.239)	0.123***	(0.329)
Mother Works	0.792	(0.406)	0.836	(0.371)	0.790*	(0.408)
English Spoken At Home	0.874	(0.332)	0.946	(0.226)	0.871***	(0.335)
School Characteristics						
Catholic School	0.040	(0.196)				
Urban School	0.352	(0.478)	0.446	(0.498)	0.348***	(0.476)
Suburban School	0.648	(0.478)	0.554	(0.498)	0.652***	(0.476)
West	0.323	(0.468)	0.364	(0.482)	0.322	(0.467)
Midwest	0.183	(0.387)	0.000	(0.000)	0.191***	(0.393)
South	0.331	(0.471)	0.189	(0.392)	0.337***	(0.473)
Northeast	0.163	(0.379)	0.446	(0.498)	0.151***	(0.358)
Instruments						
Teachers Can Strike	0.212	(0.409)	0.443	(0.498)	0.124***	(0.330)
Duty to Bargain with Union	0.137	(0.344)	0.443	(0.498)	0.202***	(0.402)
Number of Observations	7,018		280		6,738	

Note: Standard errors are in parentheses.

*** Statistically different from Catholic school mean at p<.01.

** Statistically different from Catholic school mean at p<.05.

* Statistically different from Catholic school mean at p<.10.

Table 4

The Effect of Catholic Schooling on Behavioral Outcomes
Entire Sample

Outcome Variable	OLS	Probit (Marginal Effects)	Average Treatment Effect
Cocaine	0.028**	0.0249***	0.0294
	(0.012)	(0.009)	
Marijuana	0.0457	0.0512	0.0466
	(0.036)	(0.037)	
Hard Drugs	0.0224	0.0207	0.0238
	(0.032)	(0.026)	
Injected Drugs	0.0162***	0.0125***	0.0330
	(0.006)	(0.005)	
Damaged Property	-0.0005	0.0012	0.0012
	(0.035)	(0.031)	
Burglary	0.0273***	0.0253***	0.0285
	(0.009)	(0.009)	
Gang Fight	0.0159	0.0171	0.0167
	(0.033)	(0.035)	
Attempted Suicide	-0.0189	-0.0175*	-0.0229
	(0.013)	(0.007)	
Had Sex	-0.0203	-0.014	-0.0117
	(0.015)	(0.018)	
Ran Away from Home	-0.0038	-0.0024	-0.0025
	(0.007)	(0.007)	
Sold Drugs	0.0514***	0.0462***	0.0505
	(0.012)	(0.012)	
Theft	0.0131	0.0125	0.0144
	(0.013)	(0.011)	
Robbery	0.0340***	0.0349***	0.0394
	(0.009)	(0.010)	
Number of Observations	7,018	7,018	

The entries in the first two columns are coefficients of the Catholic Schooling variable. Robust standard errors are in parentheses.

*, **, and *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table 5

The Effect of Catholic Schooling on Behavioral Outcomes Controlling for Endogeneity

Entire Sample

Outcome Variable	2-SLS	Bivariate Probit	Marginal Effect
Cocaine	-0.0192	0.1385	0.0073
	(0.059)	(0.351)	
Marijuana	-0.3409	-0.042	-0.0134
	(0.355)	(0.41)	
Hard Drugs	-0.0495	0.0356	0.0038
	(0.112)	(0.758)	
Injected Drugs	0.032	0.2416	0.000
	(0.029)	(0.779)	
Damaged Property	0.1469	-0.1607	-0.0405
	(0.207)	(0.322)	
Burglary	0.1031	-0.0625	-0.0052
	(0.097)	(0.433)	
Gang Fight	-0.173	-0.364	-0.1009
	(0.208)	(0.26)	
Attempted Suicide	0.0464	-0.4619	-0.0294
	(0.079)	(0.337)	
Had Sex	0.0826	0.5344	0.1965
	(0.195)	(0.35)	
Ran Away from Home	-0.1085	-0.0845	-0.0124
	(0.11)	(0.186)	
Sold Drugs	-0.0637	0.0336	-0.0037
	(0.136)	(0.368)	
Theft	0.1367	0.4096	0.0365
	(0.109)	(0.287)	
Robbery	0.0381	-0.0135	-0.0010
	(0.077)	(0.620)	
Number of Observations	7,018	7,018	

The entries in the first two columns are coefficients of the Catholic Schooling variable. Robust standard errors are in parentheses.

Table 6

The Effect of Catholic Schooling on Behavioral Outcomes by Gender

	Females			Males		
Outcome Variable	OLS Coefficient (Std. Err.)	Probit (Marginal Effects) Coefficient (Std. Err.)	Average Treatment Effect	OLS Coefficient (Std. Err.)	Probit (Marginal Effects) Coefficient (Std. Err.)	Average Treatment Effect
Cocaine	—	—	—	0.0426** (0.019)	0.0419*** (0.021)	0.0472
Marijuana	-0.0254 (0.043)	-0.0216 (0.038)	-0.0201	0.0859*** (0.032)	0.0932*** (0.034)	0.0841
Hard Drugs	-0.0033 (0.029)	0.0024 (0.021)	0.0032	0.0398 (0.041)	0.0335 (0.032)	0.0378
Damaged Property	-0.0350*** (0.013)	-0.0317** (0.011)	-0.0331	-0.0012 (0.046)	0.0024 (0.043)	0.0023
Burglary	-0.0089 (0.016)	-0.0031 (0.012)	-0.0040	0.0472*** (0.011)	0.0468*** (0.013)	0.0490
Gang Fight	-0.0133 (0.077)	-0.0192 (0.073)	-0.0193	0.0314 (0.03)	0.0350 (0.033)	0.0339
Attempted Suicide	-0.0403** (0.016)	-0.0319* (0.012)	-0.0370	-0.0051 (0.009)	-0.0047 (0.008)	-0.0065
Had Sex	-0.0581 (0.043)	-0.0614 (0.039)	-0.0515	0.0186 (0.024)	0.0319 (0.029)	0.0263
Ran Away from Home	-0.0188 (0.023)	-0.0099 (0.019)	-0.0105	0.0003 (0.017)	0.0005 (0.018)	0.0005
Sold Drugs	-0.0050 (0.015)	-0.0006 (0.009)	-0.0008	0.0923*** (0.025)	0.0967*** (0.027)	0.0978
Theft	0.0089 (0.022)	0.0096 (0.018)	0.0122	0.0078 (0.015)	0.0085 (0.012)	0.0094
Robbery	0.0261 (0.018)	0.0192 (0.016)	0.0241	0.0376*** (0.013)	0.0405*** (0.017)	0.0443
Number of Observations	3,563	3,563		3,455	3,455	

Robust standard errors are in parentheses. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table 7A

The Effect of Catholic Schooling on Behavioral Outcomes, Controlling for Endogeneity
Females

Outcome Variable	2-SLS	Bivariate Probit	ρ (Std. Err.)	Marginal Effect
Marijuana	-0.5502	-0.0863	0.01	-0.0266
	(0.472)	(0.372)	(0.25)	
Hard Drugs	-0.1985	-0.331	0.28	-0.0305
	(0.232)	(1.041)	(0.67)	
Damaged Property	-0.0195	-0.0619	-0.10	-0.0116
	(0.105)	(0.244)	(0.19)	
Burglary	0.0282	1.1469	-0.76	0.0447
	(0.09)	(5.947)	(2.68)	
Gang Fight	-0.0426	-0.0138	-0.06	-0.0033
	(0.219)	(0.881)	(0.48)	
Attempted Suicide	0.1084	-0.2584	-0.15	-0.0275
	(0.149)	(0.894)	(0.51)	
Had Sex	-0.0311	0.3715	-0.41*	0.1348
	(0.238)	(0.441)	(0.21)	
Ran Away from Home	-0.2157	-0.2202	0.13	-0.0351
	(0.2)	(0.524)	(0.35)	
Sold Drugs	-0.0852	-0.6799	0.55	-0.0356
	(0.136)	(0.611)	(0.40)	
Theft	0.1543	1.640	-0.90*	0.1011
	(0.110)	(1.477)	(0.51)	
Robbery	-0.0138	0.9436	-0.48	0.0494
	(0.088)	(2.923)	(1.80)	
Number of Observations	3,563	3,563		

Robust standard errors are in parentheses. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table 7B

The Effect of Catholic Schooling on Behavioral Outcomes, Controlling for Endogeneity
Males

Outcome Variable	2-SLS	Bivariate Probit	ρ (Std. Err.)	Marginal Effect
Cocaine	-0.0172	0.0409	0.27	0.0026
	(0.073)	(0.302)	(0.17)	
Marijuana	-0.149	-0.1595	0.28	-0.0524
	(0.274)	(0.449)	(0.24)	
Hard Drugs	-0.0297	0.4975	-0.16	0.0509
	(0.095)	(0.604)	(0.29)	
Damaged Property	0.2088	-0.2045	0.14	-0.0636
	(0.322)	(0.314)	(0.19)	
Burglary	0.1437	-0.0365	0.24	-0.0043
	(0.127)	(0.348)	(0.2)	
Gang Fight	-0.3161	-0.3374	0.30**	-0.1038
	(0.305)	(0.251)	(0.14)	
Attempted Suicide	0.0293	-0.2704	0.06	-0.0079
	(0.053)	(0.435)	(0.21)	
Had Sex	0.223	0.3684	-0.19	0.1362
	(0.207)	(0.273)	(0.15)	
Ran Away from Home	0.0025	0.1128	-0.07	0.0145
	(0.097)	(0.387)	(0.22)	
Sold Drugs	-0.0807	0.2527	0.14	0.0394
	(0.164)	(0.255)	(0.15)	
Theft	0.0619	0.2093	-0.10	0.0246
	(0.126)	(0.302)	(0.17)	
Robbery	0.0574	0.3053	0.03	0.0269
	(0.089)	(0.550)	(0.33)	
Number of Observations	3,455	3,455		

Robust standard errors are in parentheses. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Appendix Table 1

Variable	First-Stage Coefficients[+]	Marijuana		Burglary	
		OLS	2-SLS	OLS	2-SLS
Intercept	-0.0320	0.0318	0.0299	0.0504	0.0507
	(0.030)	(0.074)	(0.076)	(0.035)	(0.035)
Catholic School	---	0.0457	-0.3409	0.0273***	0.1031
		(0.036)	(0.355)	(0.009)	(0.097)
Male	0.0159***	0.0198	0.0262*	0.0381***	0.0369***
	(0.004)	(0.013)	(0.015)	(0.006)	(0.006)
13 Years Old	0.0174	0.0155	0.0232	0.0039	0.0024
	(0.013)	(0.018)	(0.021)	(0.012)	(0.012)
14 Years Old	0.0198	0.0512**	0.0608**	0.0066	0.0047
	(0.016)	(0.021)	(0.024)	(0.017)	(0.017)
15 Years Old	0.0211	0.1192***	0.1296***	0.0045	0.0025
	(0.017)	(0.031)	(0.032)	(0.020)	(0.020)
16 Years Old	0.0017	0.1444***	0.1479***	0.0028	0.0022
	(0.019)	(0.036)	(0.038)	(0.021)	(0.021)
17 Years Old	-0.0004	0.1437***	0.1466***	-0.0168	-0.0173
	(0.020)	(0.039)	(0.041)	(0.023)	(0.022)
18 Years Old	0.0068	0.1675***	0.1734***	-0.0247	-0.0259
	(0.022)	(0.043)	(0.047)	(0.023)	(0.023)
19 Years or Older	-0.0205	0.1850***	0.1806***	-0.0167	-0.0158
	(0.028)	(0.065)	(0.067)	(0.033)	(0.032)
Hispanic	-0.0415***	0.0727***	0.0562*	0.0011	0.0043
	(0.009)	(0.27)	(0.034)	(0.012)	(0.012)
White	-0.0084	-0.0020	-0.0052	-0.0180*	-0.0173
	(0.009)	(0.026)	(0.030)	(0.010)	(0.010)
Black	0.0099	-0.0360	-0.0353	-0.0287**	-0.0288
	(0.010)	(0.031)	(0.034)	(0.012)	(0.011)
Mother Has Less	-0.0068	0.0567*	0.0526*	-0.0183	-0.0175
Than High Sch Ed..	(0.012)	(0.031)	(0.031)	(0.020)	(0.020)
Mother Has High	0.0026	0.0348	0.0359	-0.0348*	-0.0350*
School Educ.	(0.012)	(0.026)	(0.026)	(0.019)	(0.019)
Mother Has GED	0.0015	0.0592	0.0604	0.0045	0.0043
	(0.016)	(0.039)	(0.039)	(0.024)	(0.024)
Mother Has Some	0.0019	0.0504*	0.0514*	-0.0171	-0.0173
College Educ.	(0.012)	(0.030)	(0.030)	(0.020)	(0,021)
Mother Has College	0.0078	0.0308	0.0345	-0.0262	-0.0270
Degree or More	(0.012)	(0.025)	(0.026)	(0.018)	(0.018)
Father Has Less	-0.0144	-0.0214	-0.0276	-0.0208*	-0.0196*
Than High Sch. Ed.	(0.009)	(0.024)	(0.024)	(0.012)	(0.012)
Father Has High	-0.0050	-0.0529**	-0.0542**	-0.0250**	-0.0248**
School Educ.	(0.008)	(0.022)	(0.022)	(0.011)	(0.011)
Father Has GED	0.0079	0.0162	0.0199	0.0152	0.0145
	(0.018)	(0.038)	(0.039)	(0.026)	(0.026)
Father Has Some	-0.0004	-0.0222	-0.0224	-0.0268**	-0.0268**
College Educ.	(0.009)	(0.024)	(0.024)	(0.012)	(0.012)
Father Has College	0.0265***	-0.0359*	-0.0257	-00074	-0.0095
Degree or More	(0.008)	(0.022)	(0.024)	(0.012)	(0.013)
7th Grader	-0.0291*	-0.1074**	-0.1178**	-0.0162	-0.0141
	(0.018)	(0.041)	(0.049)	(0.020)	(0.019)

(Appendix Table 1 continued)

Variable	First-Stage Coefficients	Marijuana		Burglary	
		OLS	2-SLS	OLS	2-SLS
8th Grader	-0.0271*	-0.0521	-0.0625	0.0044	0.0064
	(0.016)	(0.040)	(0.048)	(0.020)	(0.019)
9th Grader	-0.0209	-0.0417	-0.0485	-0.0094	0.0064
	(0.013)	(0.032)	(0.036)	(0.014)	(0.019)
10th Grader	-0.0060	-0.0127	-0.0146	-0.0075	-0.0081
	(0.011)	(0.027)	(0.028)	(0.011)	(0.014)
11th Grader	-0.0015	0.0128	0.0128	-0.0041	-0.0071
	(0.009)	(0.020)	(0.021)	(0.008)	(0.011)
Any Parent On	-0.0039	0.0164	0.0168	0.0236***	0.0235***
Welfare	(0.007)	(0.015)	(0.016)	(0.009)	(0.009)
Mother Works	-0.0055	0.0067	0.0057	0.0134**	0.0136**
	(0.006)	(0.014)	(0.015)	(0.006)	(0.006)
Wears Seatbelt	0.0112*	-0.1360***	-0.1310***	-0.0334***	-0.0344***
	(0.007)	(0.021)	(0.021)	(0.011)	(0.009)
Drugs At Home	-0.0010	0.3116***	0.3100***	0.1136***	0.1139***
	(0.013)	(0.032)	(0.033)	(0.025)	(0.025)
Guns At Home	-0.0025	0.0327**	0.0346*	0.0241***	0.0237***
	(0.006)	(0.016)	(0.018)	(0.008)	(0.008)
Alcohol At Home	-0.0037	0.0219*	0.0212*	0.0209***	0.0210***
	(0.005)	(0.012)	(0.012)	(0.006)	(0.006)
Catholic	0.0915***	-0.0181	0.0171	-0.0056	-0.0125
	(0.006)	(0.015)	(0.034)	(0.007)	(0.011)
Baptist	0.0124***	0.0157	0.0161	-0.0072	-0.0072
	(0.007)	(0.014)	(0.016)	(0.007)	(0.007)
Not Religious	-0.0051	0.0557***	0.0547***	0.0228**	0.0230**
	(0.007)	(0.016)	(0.016)	(0.010)	(0.010)
Born Again Christian	-0.0000	-0.0536***	-0.0543***	-0.0037	-0.0036
	(0.006)	(0.012)	(0.012)	(0.006)	(0.006)
Decides Own Curfew on Weekends	0.0038 (0.005)	0.0057 (0.012)	0.0074 (0.012)	-0.0036 (0.005)	-0.0040 (0.005)
Chooses Own Friends	-0.0092 (0.006)	0.0030 (0.015)	-0.0001 (0.015)	-0.0016 (0.007)	-0.0010 (0.007)
Decides TV Time	-0.0037	0.0430***	0.0421	0.0079	0.0081
	(0.006)	(0.012)	(0.012)	(0.007)	(0.007)
Decides Own Curfew on Weeknights	-0.0051 (0.0049)	0.0258** (0.012)	0.0238* (0.012)	0.0083 (0.006)	0.0087 (0.006)
Single Parent	0.0088	0.0026	0.0065	0.0095	0.0088
	(0.011)	(0.031)	(0.031)	(0.013)	(0.013)
Married Parents	0.0050	-0.0401*	-0.0375*	0.0056	0.0051
	(0.009)	(0.021)	(0.021)	(0.012)	(0.012)
Divorced Parents	0.0097	0.0309	0.0365	0.0152	0.0141
	(0.009)	(0.025)	(0.027)	(0.010)	(0.010)
Urban School	-0.0000	-0.0215	-0.0100	0.0026	0.0004
	(0.005)	(0.017)	(0.022)	(0.007)	(0.008)
West	-0.0244***	0.0781***	0.0579*	0.0034	0.0074
	(0.007)	(0.023)	(0.032)	(0.010)	(0.012)
Midwest	-0.1200***	0.0221	-0.0131	0.0015	0.0084
	(0.008)	(0.033)	(0.047)	(0.010)	(0.016)

(Appendix Table 1 concluded)

Variable	First-Stage Coefficients	Marijuana		Burglary	
		OLS	2-SLS	OLS	2-SLS
South	-0.0433***	-0.0461*	-0.0694*	-0.0087	-0.0041
	(0.007)	(0.024)	(0.038)	(0.009)	(0.012)
English Spoken At Home	0.0330***	0.1188***	0.1275***	0.0331***	0.0314***
	(0.009)	(0.021)	(0.025)	(0.009)	(0.009)
U.S. Born	0.0284***	0.1159***	0.1256***	-0.0031	-0.0050
	(0.009)	(0.015)	(0.018)	(0.009)	(0.009)
Number of Siblings	-0.0008	-0.0044	-0.0049	0.0026	0.0028
	(0.002)	(0.004)	(0.005)	(0.002)	(0.002)
Total Family Income (/10,000)	0.0003***	-0.0000	0.0000	-0.0001*	-0.0001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Teachers Can Strike	0.0678***	---	---	---	---
	(0.008)				
Duty to Bargain with Union	0.0993***	---	---	---	---
	(0.008)				
R-squared	0.1424	0.1346		0.0429	
Number of Observations	7,018	7,018	7,018	7,018	7,018

Robust standard errors are in parentheses. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.
+: The dependent variable is Catholic School.

Appendix Table 2

Variable	Cocaine		Sold Drugs	
	OLS	2-SLS	OLS	2-SLS
Intercept	0.0208**	0.0205	0.0030	0.0025
	(0.012)	(0.034)	(0.050)	(0.051)
Catholic School	0.028**	-0.0192	0.0514***	-0.0637
	(0.012)	(0.059)	(0.012)	(0.136)
Male	0.0113**	0.0121**	0.0606***	0.0625***
	(0.005)	(0.006)	(0.008)	(0.008)
13 Years Old	0.0001	0.0010	-0.0029	-0.0006
	(0.008)	(0.008)	(0.012)	(0.013)
14 Years Old	0.0014	0.0026	0.0047	0.0076
	(0.011)	(0.011)	(0.015)	(0.015)
15 Years Old	0.0127	0.0139	-0.0043	-0.0012
	(0.014)	(0.014)	(0.021)	(0.021)
16 Years Old	0.0275*	0.0279*	0.0058	0.0068
	(0.015)	(0.015)	(0.022)	(0.022)
17 Years Old	0.0262*	0.0265*	0.0079	0.0088
	(0.016)	(0.016)	(0.025)	(0.025)
18 Years Old	0.0376*	0.0384*	0.0367	0.0385
	(0.022)	(0.022)	(0.027)	(0.027)
19 Years or Older	0.0169	0.0163	-0.0028	-0.0041
	(0.029)	(0.029)	(0.034)	(0.035)
Hispanic	0.0199*	0.0178	0.0527*	0.0478
	(0.012)	(0.011)	(0.029)	(0.032)
White	0.0108	0.0104	-0.0085	-0.0095
	(0.010)	(0.010)	(0.019)	(0.021)
Black	-0.0114	-0.0113	0.0055	0.0057
	(0.010)	(0.010)	(0.019)	(0.020)
Mother Has Less Than	-0.0059	-0.0064	-0.0023	-0.0036
High School Educ.	(0.013)	(0.013)	(0.017)	(0.017)
Mother Has High	-0.0149	-0.0147	-0.0146	-0.0143
School Educ.	(0.011)	(0.011)	(0.018)	(0.018)
Mother Has GED	-0.0077	-0.0076	-0.0010	-0.0007
	(0.015)	(0.015)	(0.022)	(0.022)
Mother Has Some	-0.0092	-0.0091	0.0099	0.0102
College Educ.	(0.012)	(0.012)	(0.016)	(0.016)
Mother Has College	-0.0120	-0.0115	-0.0088	-0.0077
Degree or More	(0.012)	(0.012)	(0.017)	(0.018)
Father Has Less Than	-0.0127*	-0.0134*	-0.0105	-0.0123
High School Educ.	(0.008)	(0.007)	(0.013)	(0.013)
Father Has High	-0.0113	-0.0114	-0.0046	-0.0050
School Educ.	(0.007)	(0.007)	(0.010)	(0.010)
Father Has GED	-0.0252*	-0.0247*	-0.0105	-0.0094
	(0.013)	(0.013)	(0.028)	(0.027)
Father Has Some	-0.0030	-0.0030	-0.0043	-0.0044
College Educ.	(0.009)	(0.009)	(0.012)	(0.012)
Father Has College	-0.0142*	-0.0130*	-0.0156	-0.0125
Degree or More	(0.008)	(0.007)	(0.011)	(0.011)
7th Grader	0.0015	0.0003	-0.0148	-0.0179
	(0.021)	(0.022)	(0.025)	(0.026)
8th Grader	0.0040	0.0027	-0.0046	-0.0078
	(0.018)	(0.019)	(0.022)	(0.023)

(Appendix Table 2 continued)

Variable	Cocaine		Sold Drugs	
	OLS	2-SLS	OLS	2-SLS
9th Grader	-0.0033	-0.0041	0.0286	0.0265
	(0.018)	(0.019)	(0.018)	(0.018)
10th Grader	-0.0017	-0.0020	0.0185	0.0179
	(0.014)	(0.014)	(0.018)	(0.018)
11th Grader	-0.0059	-0.0059	0.0246*	0.0246*
	(0.012)	(0.012)	(0.013)	(0.013)
Any Parent On Welfare	0.0001	0.0001	0.0091	0.0092
	(0.009)	(0.008)	(0.009)	(0.009)
Mother Works	-0.0041	-0.0042	0.0007	0.0004
	(0.006)	(0.006)	(0.007)	(0.008)
Wears Seatbelt	-0.0164**	-0.0158**	-0.0617***	-0.0603***
	(0.008)	(0.008)	(0.016)	(0.016)
Drugs At Home	0.0980***	0.0978***	0.1590***	0.1585***
	(0.024)	(0.025)	(0.028)	(0.028)
Guns At Home	0.0020	0.0022	0.0247**	0.0252**
	(0.007)	(0.007)	(0.011)	(0.011)
Alcohol At Home	0.0026	0.0025	0.0166*	0.0163*
	(0.005)	(0.005)	(0.009)	(0.009)
Catholic	-0.0068	-0.0025	-0.0092	0.0013
	(0.007)	(0.009)	(0.010)	(0.014)
Baptist	-0.0070	-0.0069	0.0014	0.0015
	(0.005)	(0.005)	(0.009)	(0.009)
Not Religious	0.0098	0.0096	0.0094	0.0091
	(0.008)	(0.008)	(0.012)	(0.012)
Born Again Christian	0.0005	0.0004	-0.0166**	-0.0168**
	(0.005)	(0.005)	(0.008)	(0.008)
Decides Own Curfew	0.0092*	0.0095*	0.0056	0.0062
on Weekends	(0.006)	(0.006)	(0.009)	(0.009)
Chooses Own Friends	-0.0036	-0.0040	0.0016	0.0006
	(0.006)	(0.005)	(0.009)	(0.009)
Decides TV Time	0.0006	0.0005	0.0109	0.0106
	(0.005)	(0.005)	(0.007)	(0.007)
Decides Own Curfew	0.0011	0.0008	0.0017	0.0012
on Weeknights	(0.005)	(0.005)	(0.007)	(0.007)
Single Parent	0.0005	0.0010	-0.0080	-0.0069
	(0.013)	(0.013)	(0.016)	(0.016)
Married Parents	-0.0066	-0.0063	-0.0050	-0.0042
	(0.012)	(0.012)	(0.014)	(0.014)
Divorced Parents	0.0099	0.0106	0.0011	0.0028
	(0.011)	(0.011)	(0.019)	(0.020)
Urban School	-0.0081*	-0.0067	-0.0135*	-0.0101
	(0.005)	(0.006)	(0.008)	(0.010)
West	0.0176**	0.0151*	0.0312**	0.0252*
	(0.007)	(0.008)	(0.013)	(0.016)
Midwest	-0.0059	-0.0102	0.0062	-0.0043
	(0.008)	(0.009)	(0.014)	(0.020)
South	0.0023	-0.0006	-0.0086	-0.0156
	(0.007)	(0.008)	(0.012)	(0.017)
English Spoken At	0.0041	0.0052	0.0467***	0.0493***
Home	(0.006)	(0.007)	(0.009)	(0.010)
U.S. Born	0.0146**	0.0159***	0.0250**	0.0279**
	(0.006)	(0.006)	(0.010)	(0.011)

(Appendix Table 2 concluded)

Variable	Cocaine		Sold Drugs	
	OLS	2-SLS	OLS	2-SLS
Number of Siblings	-0.0017	-0.0017	-0.0012	-0.0014
	(0.002)	(0.002)	(0.002)	(0.002)
Total Family Income	0.0000	0.0000	-0.0001**	-0.0001
(/10,000)	(0.000)	(0.000)	(0.000)	(0.000)
Teachers Can Strike	---	---	---	---
Duty to Bargain with Union	---	---	---	---
R-squared	0.0314		0.0638	
Number of Observations	7,018	7,018	7,018	7,018

Robust standard errors are in parentheses. *, **, or *** indicate that the estimated coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

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